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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/767,268	01/30/2004	Qinglin Li	021238-532	4833
21839 7590 04/12/2007 BUCHANAN, INGERSOLL & ROONEY PC POST OFFICE BOX 1404 ALEXANDRIA, VA 22313-1404			EXAMINER GELLNER, JEFFREY L	
			ART UNIT	PAPER NUMBER
			3643	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/12/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

## Office Action Summary

**Application No.**

10/767,268

**Applicant(s)**

LI ET AL.

**Examiner**

Jeffrey L. Gellner

**Art Unit**

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**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 29 January 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-42 and 44-52 is/are pending in the application.
- 4a) Of the above claim(s) 3-6, 11, 19, 21-42, 44-46 and 48-52 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 7-10, 12-18, 20, 47 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Election/Restrictions***

Applicant's election of Species A - solution applied to the leaves of growing tobacco plants - and abscisic acid as the chemical in the reply filed on 29 January 2007 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)). Claims 3-6, 11, 19, 21-42, 44-46, and 48-52 are withdrawn from examination because they are drawn to a non-elected species. Claim 19 is withdrawn because of it is drawn to stimulated formation of reactive oxygen which is disclosed as a trait of diphenyl ethers at page 5 of the specification and not ABA.

### ***Claim Objections***

Claims 17 and 47 are objected to because of the following informality:

The two claims appear to claim the same subject matter.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

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Claims 1, 2, 7-10, 12-18, 20, and 47 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for several chemical solutions (including ABA), does not reasonably provide enablement for any or all chemical solutions. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to practice the method of the invention commensurate in scope with these claims.

Not all chemical solutions will <sup>lower</sup>~~raise~~ the level of TSNAs in tobacco with foliar spraying.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 7-10, 12, and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Kim et al. (Korean J. Bot., 1986).

As to claim 1, Kim et al. disclose a method of reducing tobacco-specific nitrosamines in cured tobacco comprising raising the levels of antioxidant in tobacco leaves by spraying a chemical solution onto leaves of a growing tobacco plant (from “plants were respectively sprayed” and “15 ml of . . . 100  $\mu$ grams ml<sup>-1</sup>” of “Plant materials” of “Materials and Methods” section of page 42) at least one time prior to harvesting (from “harvested” of “Plant materials” of “Materials and Methods” section of page 42), the antioxidant being raised at least 25% compared to harvested tobacco grown without being sprayed with the chemical solution (Since Kim et al. discloses spraying ABA at a concentration within those disclosed by Applicants at pages 9 and

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10 of the specification, the method of Kim et al. would inherently raise the antioxidant level at least 25%).

As to claim 2, Kim et al. further disclose abscisic acid (from “ABA” of “Plant materials” of “Materials and Methods” section of page 42).

As to claim 7, Kim et al. further disclose a plant growth hormone (from “ABA” of “Plant materials” of “Materials and Methods” section of page 42).

As to claim 8, Kim et al. further disclose a plant growth hormone is elevated in conc from a conventional tobacco treatment (in that ABA is not conventionally sprayed on tobacco).

As to claim 9, Kim et al. further disclose the chemical solution affecting reduction in available carbon dioxide (from, for example, “frequency of stomatal number per square millimeter was decreased” of “Closure and frequency of stoma” of page 47).

As to claim 10, Kim et al. further disclose preparing cured tobacco by harvesting and curing (from “harvested” of “Plant materials” of “Materials and Methods” section of page 42 in that the harvested leaves would dry over time), the level of antioxidants in the tobacco leaves being sufficient to reduce nitrosation during the yellowing and browning phases of the curing process (inherent in air drying).

As to claim 12, Kim et al. further disclose spraying at different times (from “every two days” of “Plant materials” of “Materials and Methods” section of page 42).

As to claim 20, MPEP 2113 states that “if the product in the product-by-process claim is the same as a product of the prior art, the claim is unpatentable even though the prior art product was made by a different process. The instant claim is anticipated by low TSNA cigarettes or cigarettes made from drought stressed tobacco.

As to claim 18, Kim et al. disclose a method of reducing tobacco-specific nitrosamines in cured tobacco comprising raising the levels of antioxidant in tobacco leaves by spraying a chemical solution onto leaves of a growing tobacco plant (from “plants were respectively sprayed” and “15 ml of . . . 100  $\mu$ grams ml<sup>-1</sup>” of “Plant materials” of “Materials and Methods” section of page 42) at least one time prior to harvesting (from “harvested” of “Plant materials” of “Materials and Methods” section of page 42), the antioxidant being raised at least 25% compared to harvested tobacco grown without being sprayed with the chemical solution (Since Kim et al. discloses spraying ABA at a concentration within those disclosed by Applicants at pages 9 and 10 of the specification, the method of Kim et al. would inherently raise the antioxidant level at least 25%); the chemical solution affecting reduction in available carbon dioxide (from, for example, “frequency of stomatal number per square millimeter was decreased” of “Closure and frequency of stoma” of page 47).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 13, 15, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al. (Korean J. Bot., 1986).

As to claim 13, the limitations of claim 1 are disclosed as described above. Kim et al. further disclose air curing after harvest (from “harvested” of “Plant materials” of “Materials and Methods” section of page 42 in that the harvested leaves would dry over time which is equivalent to air curing). Not disclosed is the tobacco being burley. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Kim et al. by using burley tobacco so as to do the study on an agriculturally important “type.”

As to claim 15, the limitations of claim 1 are disclosed as described above. Kim et al. further disclose the plants sprayed at least one week prior to harvest (from “Plant materials” of “Materials and Methods” section of page 42). Not disclosed is the tobacco sprayed only once. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Kim et al. by spraying only once so as to determine the lower concentration ABA which will affect the plant.

As to claim 16, the limitations of claim 1 are disclosed as described above. Not disclosed is the tobacco sprayed between topping and harvest. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Kim et al. by older plants and studying after toppings so as to determine the effect of age on ABA spraying.

Claims 14, 17, and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al. (Korean J. Bot., 1986) in further view of Agboma et al. (Expl. Agric., 1997) in further view of Rensburg et al. (Can. J., Bot., 1994).

As to claims 14, 17, and 47, the limitations of claim 1 are disclosed as described above. Not disclosed is further subjecting the tobacco plant to mechanical stress. Agboma et al.,

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however, discloses an experiment where tobacco plants are subjected to mechanical stress (from “by applying 17 and 11 ml of water to the pots every day” of “Growth conditions and treatments” of page 347) and a plant growth regulator foliarly applied (from “foliage of plants was sprayed to run off” of “Growth conditions and treatments” of page 346) which is considered root pruning since drought stress is known to inhibit root growth; Rensburg et al. disclose that ABA accumulates in drought stressed tobacco (abstract). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Kim et al. by altering the study by drought stressing the plants by a mechanical means as disclosed by Agboma to determine if foliar ABA can reduce drought stress in tobacco since Rensburg et al. discloses that ABA is associated to tolerance to drought stress (from “abscisic acid concentrations . . . were greater in the drought-tolerant cultivars” of abstract of Rensburg et al.).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey L. Gellner whose telephone number is 571.272.6887. The examiner can normally be reached on Monday-Friday, 8:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Poon can be reached on 571.272.6891. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

A handwritten signature in black ink, appearing to read 'J. Gellner', with a stylized flourish at the end.

Jeffrey L. Gellner  
Primary Examiner  
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